

WHAT IS CLAIMED IS:

1. A driving apparatus comprising:

a rotatable rotor with a ring shape, said rotor having magnet portions which are divided along a circumferential direction and differently magnetized;

5 a first magnetic pole portion, said first magnetic pole portion being formed extending in a direction perpendicular to a rotational axis of said rotor, and facing a face of said magnet portion perpendicular to the rotational axis;

a second magnetic pole portion, said second magnetic pole portion sandwiching said magnet portion between said second magnetic pole portion and said first magnetic pole portion, and facing another face of said magnet portion perpendicular to the rotational axis; and

15 a coil for magnetically exciting said first magnetic pole portion and said second magnetic pole portion, said coil being disposed radially of said rotor;

wherein a condition of $-0.333X+0.9<Y$ is satisfied where Y is a ratio of a central angle of each first magnetic pole portion relative to a central angle of each magnetized pole in said magnet portion, and X is a ratio of an outer circumferential length of each magnetized pole in said magnet portion relative to a thickness of said magnet portion in a

direction of the rotational axis.

2. A driving apparatus according to claim 1,
further comprising a regulating member, said
5 regulating member regulating a rotational range of
said rotor such that this rotational range includes
regions in which directions of attractive force due
to magnetic force acting between said magnet portion
and said first magnetic pole portion are opposite to
10 each other, but does not include a region in which a
center of said magnetized pole in said magnet portion
faces a center of said first magnetic pole portion.

3. A driving apparatus according to claim 1,
15 wherein a rotational position of said rotor can be
selectively changed to one of three positions by
selecting one of a state in which no current is
supplied to said coil, a state in which current in a
predetermined direction is supplied to said coil, and
20 a state in which current in a direction opposite to
the predetermined direction is supplied to said coil.

4. A light-amount regulating apparatus
comprising:
25 a rotatable rotor with a ring shape, said rotor
having magnet portions which are divided along a
circumferential direction and differently magnetized;

an output member, said output member being actuated according to rotation of said rotor;

a first magnetic pole portion, said first magnetic pole portion being formed extending in a direction perpendicular to a rotational axis of said rotor, and facing a face of said magnet portion perpendicular to the rotational axis;

a second magnetic pole portion, said second magnetic pole portion sandwiching said magnet portion between said second magnetic pole portion and said first magnetic pole portion, and facing another face of said magnet portion perpendicular to the rotational axis;

a coil for magnetically exciting said first magnetic pole portion and said second magnetic pole portion, said coil being disposed radially of said rotor;

a plate having an aperture portion; and

a light-amount regulating member for changing the amount of light passing through said aperture portion, said light-amount regulating member being driven by said output member, and moved on said aperture portion of said plate;

wherein a condition of $-0.333X+0.9<Y$ is satisfied where Y is a ratio of a central angle of each first magnetic pole portion relative to a central angle of each magnetized pole in said magnet

portion, and X is a ratio of an outer circumferential length of each magnetized pole in said magnet portion relative to a thickness of said magnet portion in a direction of the rotational axis.

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5. A light-amount regulating apparatus according to claim 4, further comprising a regulating member, said regulating member regulating a rotational range of said rotor such that this
10 rotational range includes regions in which directions of attractive force due to magnetic force acting between said magnet portion and said first magnetic pole portion are opposite to each other, but does not include a region in which a center of said magnetized
15 pole in said magnet portion faces a center of said first magnetic pole portion.

6. A light-amount regulating apparatus according to claim 4, wherein a rotational position
20 of said rotor can be selectively changed to one of three positions by selecting one of a state in which no current is supplied to said coil, a state in which current in a predetermined direction is supplied to said coil, and a state in which current in a
25 direction opposite to the predetermined direction is supplied to said coil.

7. A light-amount regulating apparatus according to claim 6, wherein said rotor can be held at a first rotational position by attractive force due to magnetic force acting between said magnet
5 portion and said first magnetic pole portion when no current is supplied to said coil, and can be selectively held at one of a second rotational position and a third rotational position which are rotated from the first rotational position in
10 mutually opposite directions, according to a direction of current supplied to said coil.

8. A light-amount regulating apparatus according to claim 7, wherein said light-amount
15 regulating member changes its aperture diameter according to the rotational position of said rotor, and the aperture diameter has a maximum diameter when said rotor is in the second rotational position, a minimum diameter when said rotor is in the third
20 rotational position, and an intermediate diameter between the maximum diameter and the minimum diameter when said rotor is in the first rotational position.

9. A lens driving apparatus comprising:
25 a rotatable rotor with a ring shape, said rotor having magnet portions which are divided along a circumferential direction and differently magnetized;

a first magnetic pole portion, said first magnetic pole portion being formed extending in a direction perpendicular to a rotational axis of said rotor, and facing a face of said magnet portion
5 perpendicular to the rotational axis;

a second magnetic pole portion, said second magnetic pole portion sandwiching said magnet portion between said second magnetic pole portion and said first magnetic pole portion, and facing another face
10 of said magnet portion perpendicular to the rotational axis;

a coil for magnetically exciting said first magnetic pole portion and said second magnetic pole portion, said coil being disposed radially of said
15 rotor;

a lens, a light beam passing said lens passing through a central portion of said rotor; and

a lens holding member for holding said lens, said lens holding member being moved in a direction
20 of an optical axis of said lens according to rotation of said rotor;

wherein a condition of $-0.333X + 0.9 < Y$ is satisfied where Y is a ratio of a central angle of each first magnetic pole portion relative to a
25 central angle of each magnetized pole in said magnet portion, and X is a ratio of an outer circumferential length of each magnetized pole in said magnet portion

relative to a thickness of said magnet portion in a direction of the rotational axis.

10. A lens driving apparatus according to claim
5 9, further comprising a regulating member, said
regulating member regulating a rotational range of
said rotor such that this rotational range includes
regions in which directions of attractive force due
to magnetic force acting between said magnet portion
10 and said first magnetic pole portion are opposite to
each other, but does not include a region in which a
center of said magnetized pole in said magnet portion
faces a center of said first magnetic pole portion.

15 11. A lens driving apparatus according to claim
9, wherein a rotational position of said rotor can be
selectively changed to one of three positions by
selecting one of a state in which no current is
supplied to said coil, a state in which current in a
20 predetermined direction is supplied to said coil, and
a state in which current in a direction opposite to
the predetermined direction is supplied to said coil.

12. A lens driving apparatus according to claim
25 11, wherein said rotor can be held at a first
rotational position by attractive force due to
magnetic force acting between said magnet portion and

said first magnetic pole portion when no current is supplied to said coil, and can be selectively held at one of a second rotational position and a third rotational position which are rotated from the first rotational position in mutually opposite directions, according to a direction of current supplied to said coil.